OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
SPECIAL INSTRUCTION SHEET

QA: N/A

Page: 1 of: 1

This is a placeholder page for records that cannot be scanned or microfilmed

1. Record Date 06/01/97	10. Accession Number MOL.19971117.0460
2. Author Name(s) N/A	3. Author Organization N/A

4. Title
YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT SUMMARY OF SOCIOECONOMIC DATA ANALYSES CONDUCTED IN SUPPORT OF THE RADIOLOGICAL MONITORING PROGRAM FIRST QUARTER 1996 TO FIRST QUARTER 1997, JUNE 1, 1997 (C)

5. Document Number(s) N/A	6. Version N/A
7. Document Type REPORT	8. Medium PAPER, OPTIC

9. Access Control Code
PUB

11. Traceability Designator
WBS - 1.2.8.6

12. Comments
ONE-OF-A-KIND COLOR DOCUMENT; THIS RECORD CAN BE LOCATED THROUGH THE RPC

WBS 1.2.8.6
QA: N/A

Yucca Mountain Site Characterization Project
Summary of Socioeconomic Data Analyses
Conducted in Support of the Radiological Monitoring Program
First Quarter 1996 to First Quarter 1997

June 1997

Prepared for:

U.S. Department of Energy
Yucca Mountain Site Characterization Project Office
P.O. Box 98608
Las Vegas, Nevada 89193-8608

Prepared by:

TRW Environmental Safety Systems Inc.
1180 Town Center Drive
Las Vegas, Nevada 89134

Under Contract Number
DE-AC01-91RW00134

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1.0 INTRODUCTION

This document is the seventh in a series of annual reports that provide information about the spatial distribution of population and agricultural activities within a 50-mile radius of Yucca Mountain. The objective of this report is to make available site-specific data for performing radiation dose and risk assessments related to the Yucca Mountain Site Characterization Project (YMP). This research is conducted in support of the Radiological Monitoring Plan (DOE, 1990) for the YMP.

1.1 BACKGROUND

The Radiological Monitoring Plan (the controlling document for this report) is written in compliance with the Nuclear Waste Policy Act of 1982, as amended (NWPA, 1982). In Title 10 Code of Federal Regulation Part 960 (10 CFR 960) *General Guidelines for the Recommendation of Sites for Nuclear Waste Repositories*, there are several specific references to population distributions and densities, to the socioeconomic conditions in the study area, and to the relative importance of these data. Based on the regulatory requirements, knowledge of the radiological pathways to man within the study area is essential to ensure adherence to the Federal standards. The objective of this guidance is to "minimize risk to the public and permit compliance with the EPA and NRC regulations" (10 CFR 960, p. 47741). These regulations require that protective measures be assessed and that exposure to members of the public in unrestricted areas not only be limited, but be "further reduced below the limits to the extent reasonably achievable ." (10 CFR 960, p. 47741).

Based on the requirements set forth in the Radiological Monitoring Plan, the Radiological Monitoring Program (RadMP) was developed for the purpose of providing the data necessary for radiological impact analysis related to the YMP. The primary data required for the socioeconomic support of radiological impact analyses are those used in computer models that assess radiation dose estimates for an individual or a population (DOE, 1990). Models that describe the atmospheric human pathway incorporate various data, including demographic and agricultural characteristics, with factors such as distance from the source and meteorological data, to compute potential exposure doses to members of the public through atmospheric dispersion of radionuclide releases. An example of such a model is the Clean Air Act Assessment Package-1988 for a personal computer (CAP88-PC). CAP88-PC allows users to perform dose and risk assessments for the purpose of demonstrating compliance with 40 CFR 61.93(a) and provides the methodology for "assessments of both collective populations and maximally-exposed individuals" (EPA, 1992, p 1-1).

1.2 THE RADMP SOCIOECONOMIC DATA REQUIREMENTS

A principal issue regarding RadMP requirements is that the data must be site-specific. Technical guidance notes, "because of the arid characteristics of the Yucca Mountain area, site-specific data are very important because most generic data were developed for non-arid environments" (DOE, 1990). The site-specific RadMP data requirements include characteristics of radioactive aerosols, meteorological factors, agricultural and cultural characteristics, population demographics, and general biota data (DOE, 1990).

This report focuses on demographic and agricultural data required for the assessment of radiation dose and exposure estimates for individuals or populations. The Enviornmental Protection Agency (EPA) states: "knowledge of population densities and spatial distribution of farm animals is necessary to assess protective measures required in the event of an accidental release of radioactivity...." (EPA, 1990).

As mentioned in the preceding section, another requirement is that the data must be suitable for use in computer models designed specifically to assess the health effects of low-level chronic (long term) exposures. This means that the population of interest consists of that segment at risk of long-term exposure. This segment, in turn, consists of two related but distinguishable components: (1) daytime populations; and (2) resident populations. For purposes of the RadMP, daytime populations are comprised of groups of employees and school age children who are repeatedly found at the same specific locations. Resident populations are consistent with census definitions. (U.S. Bureau of the Census, 1991: B-1 to D-14).

The population at risk of "short term" exposure includes persons visiting or residing in the area on a temporary basis, such as those staying in recreational vehicle parks or jail facilities. While knowledge of these populations is necessary to assess protective and emergency response measures, their inclusion in the population estimates would be inappropriate since the computer models used for radiological impact analyses "cannot be used for either short term or high-level radionuclide intakes" (EPA, 1992, p. 1-3).

The agricultural data requirements of the RadMP are intended to identify sources of possible concentrations of radionuclides from local origins. The factors taken into consideration include the location and quantity of fruits and vegetables grown within the study area, the quantity of dairy products produced, and the number of meat-producing animals raised within the study area. Consideration is given to animals that graze. The EPA notes, "grazing animals ingest forage from large areas of ground surface and so represent a concentration mechanism" (EPA, 1990). Milk is perhaps the most significant source for possible concentration of radionuclides because of the relatively short time between the ingestion of feed by the milk cows to the time the milk appears on grocery shelves for human consumption.

1.3 REPORT ORGANIZATION

Section 2.0 of this document provides a brief description of the methods and procedures used to compile information about the distribution of population and agricultural activities in the 50-mile radius of Yucca Mountain. A summary of housing, population, employment, enrollment, and agricultural data is presented in Section 3.0. Document references are shown in Section 4.0, and Appendix A provides a description of the RadMP grid.

1.4 CHANGES FROM PREVIOUS REPORTS

There have been methodological and data improvements in the development of population estimates within the RadMP since the previous report (DOE, 1996). These improvements have been sufficient to warrant the development of a revised set of 1st Quarter 1996 (1Q/96) estimates to maintain

consistency with subsequent estimates. One of the improvements involved the use of Global Positioning System (GPS) technology to more accurately identify the grid cell locations of housing units and population between Beatty and Scotty's Junction, Nevada and in Inyo County, California (Death Valley). This survey was done on April 17, 1997. Fieldwork in 1997 also revealed that the Mt. Charleston Elementary School, located in Pahrump, Nevada, is actually outside the grid. In 1996, this school was believed to be within the grid. Thus, this report provides enrollment figures for 1996 and 1997 that reflect this correction. Other improvements include: (1) the availability of current information on the number of persons per household; (2) an automated system for allocating Valley Electric Association (VEA) electric meter data into grid cells; (3) increased accuracy in the geographic information system (GIS) overlay between the grid cells and other coverages, including streets; and (4) more precise information for placing VEA meters within grid cells.

Even though there have been improvements in both the coverage of the VEA utility data used to generate housing unit estimates and the classification of these estimates by grid cell, the basic method for estimating population has not changed; namely, the Housing Unit Method, (HUM), which is described in Section 2.2.1, below. Neither has there been a change in the "population" being estimated. Its definition also has not changed: namely, the definition used by the U.S. Bureau of the Census for its enumeration and estimation programs (U.S. Bureau of the Census, 1991: B-1 to D-14.). The definitions of housing unit and household used in this report also are consistent with past practice and, in addition, in conformance with the concepts and definitions used by the U.S. Bureau of the Census (1993: B-14 to B-19).

Another change from the previous report is that population estimates by race and Hispanic origin for the 1st Quarter of 1997 (1Q/97), are provided for the main communities within the grid: Amargosa Valley, Beatty, Indian Springs, and Pahrump. These estimates are derived from the "biosphere" survey conducted in the spring of 1997 (UNLV, 1997).

In July 1995, a change was made in the reporting of on-site employment for the Nevada Test Site (NTS) and the YMP, which affects Table 3-6 in this report. Prior to July 1995, employment for both sites was reported in a single category, while subsequent NTS and YMP employment figures are reported separately (DOE/NV, 1995). As a consequence of this change, employment data for the NTS and the YMP prior to December 1996, are not reported in Table 3-6.

2.0 METHODS AND PROCEDURES

2.1 THE RADMP GRID AND STUDY AREA

The RadMP grid circle is defined in the YMP Radiological Monitoring Plan (DOE, 1990) as an area with a radius of 84 kilometers (km) (approximately 50 miles) of Yucca Mountain. The grid is centered on a point on the western side of Exile Hill at the Yucca Mountain site with the coordinates of Easting 551135.7, Northing 4078351.6 on the Universal Transverse Mercator (UTM) Projection Grid Zone 11 of the North American continent (Figure 2-1). Although the grid itself has not changed, there have been improvements in the overlay between the grid and other information, including streets. This, along with the improvements described in the previous section, led to the creation of revised estimates for 1Q/96 in order to have consistency with subsequent estimates through 1Q/97.

Figure 2-2 shows the community boundaries within the RadMP grid area. The study area includes the communities of Amargosa Valley, Beatty, and Pahrump in southern Nye County, Nevada; and Indian Springs in Clark County, Nevada. The boundaries shown in Figure 2-2 for Amargosa Valley, Beatty, and Pahrump are the tax boundaries specified by the Nye County Board of Commissioners. The boundary for Indian Springs is the legal description specified for the unincorporated town by the Clark County Commissioners. Also contained within the study area are portions of Death Valley National Park (DVNP), the NTS, and the Nellis Air Force Range (NAFR).

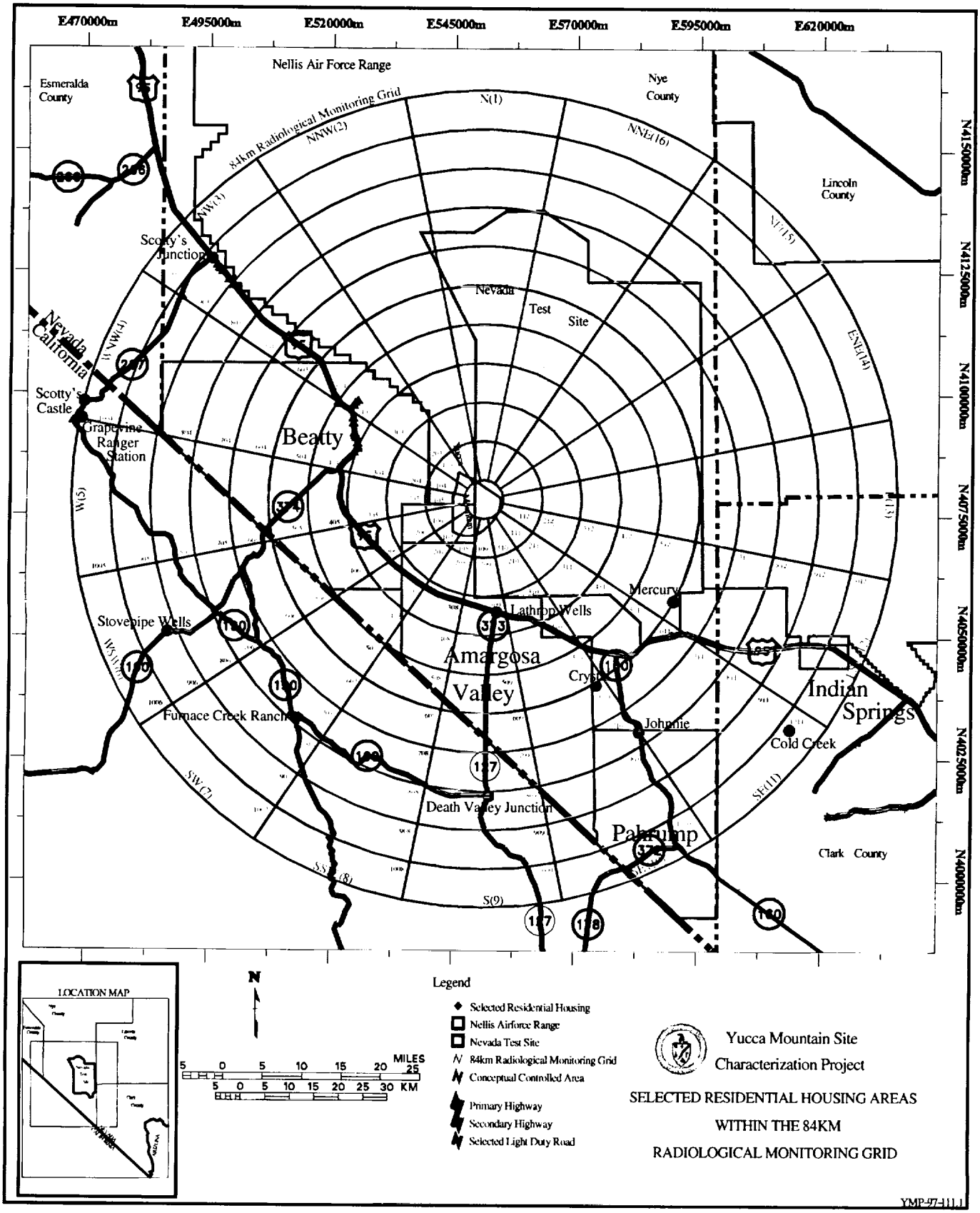

Figure 2-1. Radiological Monitoring Program Grid (RadMP Grid)

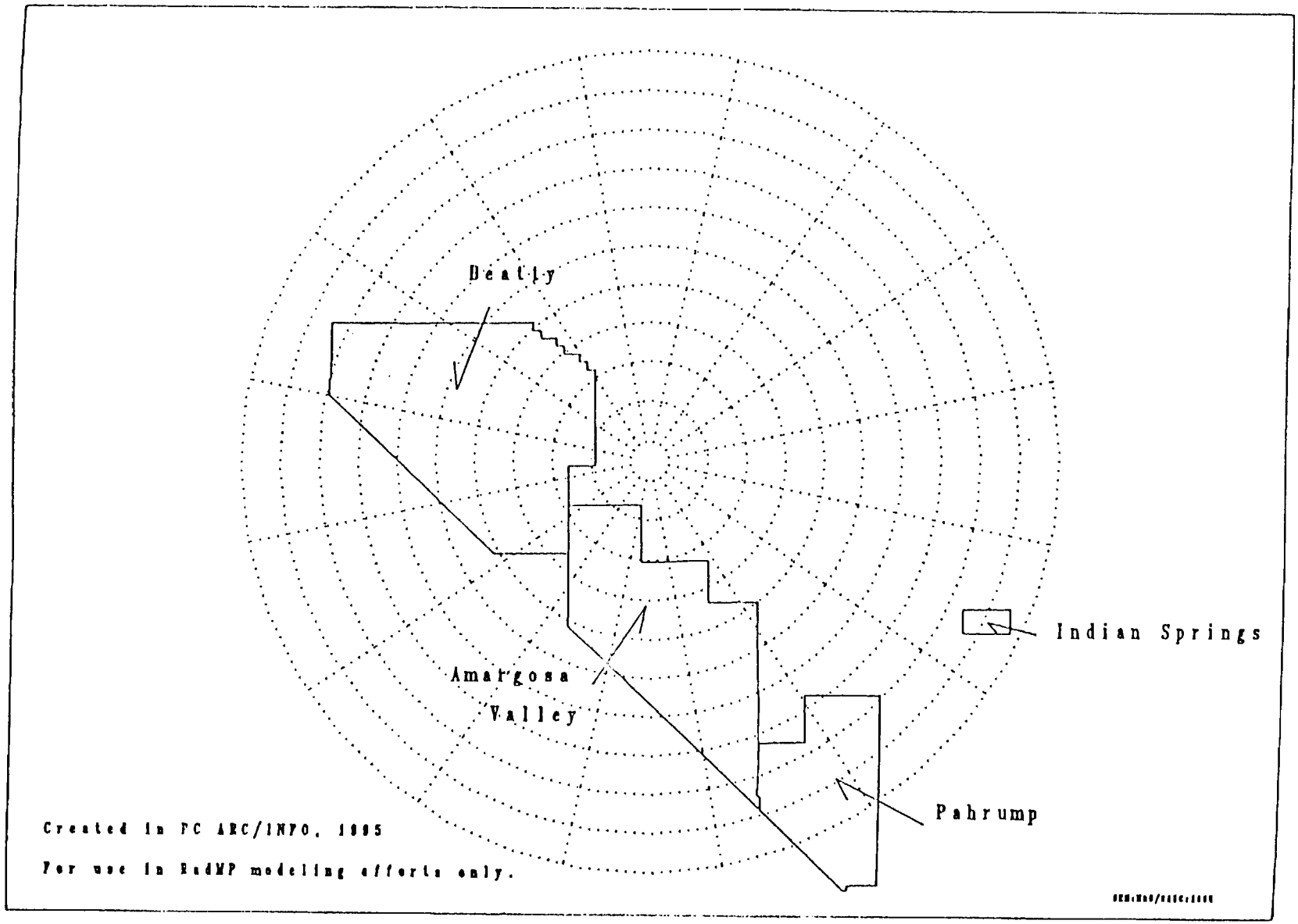

Figure 2-2. Boundaries for the Communities Within the RadMP Grid

Taxation boundaries and town boundaries do not correspond directly to the RadMP grid cell boundaries. Often, the community boundaries encompass partial grid cells and, in the case of Pahrump, may extend beyond the 84-km grid delineation. It is also important to note that the community of Pahrump includes areas both within and outside the RadMP grid. As a consequence, Section 3.2 provides information not only for the portion of Pahrump that is within the grid, but also for: (1) an area outside the grid but within the town tax boundary; and (2) for the portion of Pahrump that corresponds to the VEA service area, but includes areas outside both the tax boundary and the grid.

2.2 DATA COLLECTION PROCEDURES

2.2.1. Population

The estimates of daytime populations were obtained by collecting employment and enrollment information for locations within the grid. The sources of this employment and enrollment information are described in Tables 3-6 to 3-7 and 3-8 to 3-9, respectively.

The resident population estimates primarily were developed using the housing unit method (HUM). This procedure, which is used by nearly 90 percent of the state and local agencies responsible for preparing population estimates, is dependent on four variables: housing units, occupancy rates, population per household; and the population in group quarters (Byerly, 1990; Roe, Carlson and Swanson 1992). The HUM equation is as follows:

$$P = [(H)*(OR)*(PPH)]+GQ$$

where

P = total population

H = total housing units

OR = occupancy rate (occupied units/total units)

PPH = population per occupied household

GQ = population in group quarters

As mentioned earlier, the housing and population data follow the same concepts and definitions used by the U.S. Bureau of the Census. In terms of group quarters, it is important to note that all persons not living in households are classified by the Census Bureau as living in group quarters. Two general categories of persons in group quarters are recognized: (1) institutionalized persons; and (2) other persons in group quarters (also referred to as "noninstitutional group quarters" (U.S. Bureau of the Census, 1993: B-1 to D-5).

Clark County- The Clark County Department of Comprehensive Planning produces annual population estimates for small areas (census tracts) in the county based on two data sources: (1) building permits; and (2) historical census data describing each census tract's population per household and occupancy rates. The Clark County estimates were used for Indian Springs for 1Q/96. The HUM was used for 1Q/97, with housing unit and household estimates taken directly from a survey of Indian Springs and a PPH value taken from the "biosphere" survey (UNLV, 1997). Information obtained from military and civilian respondents during the survey verified that there is no group quarters population in Indian Springs in 1997.

The HUM also was used for Cold Creek, which is in Clark County and approximately ten miles southwest of Indian Springs (Grid Cell 1011). The VEA supplies power to Cold Creek and provides a source of data for the number of housing units in Cold Creek. However, experience has shown that there are many vacation homes in this area, which means that there are many fewer units occupied by those who would be considered a resident according to the criteria used by the U.S. Bureau of the Census. Thus, a "windshield survey" was conducted on June 14, 1997, to count housing units that could be compared with the estimates based on the VEA data. The results of the windshield survey were consistent with the VEA estimate. The Indian Springs PPH value was applied to Cold Creek. There is no group-quarters population in the Cold Creek area.

Esmeralda County - Neither a resident nor daytime population is in the portion of the RadMP grid circle (cell 1004, and portions of grid cells 904 and 1003) within Esmeralda County. This was confirmed by field work, most recently in April 1997.

Lincoln County - Neither a resident nor daytime population is in the part of the RadMP grid circle (cells 915 and 1015) within the portion of Lincoln County that is outside of the Nellis Air Force Range. This was confirmed by field work, most recently in June 1997.

Nye County - There are both resident and daytime populations in the portion of Nye County covered by the RadMP grid circle. For the most part, these populations are found in Beatty, Amargosa Valley, and Pahrump. The sources of the daytime population estimates are described in Tables 3-6 through 3-9. The resident population estimates were developed using the HUM.

In the case of Beatty, it is known that the VEA data underestimate both the total number of housing units and occupied housing units, because of the high proportion of "master meters" (DOE, 1996). Thus, a 100 percent count of housing units and occupied units was done for Beatty in February 1997. This is consistent with past practice (DOE, 1996). As verification of the presence of master meters in Beatty, note that for 1Q/97 the VEA shows 707 active residential meters, which is 44 less than the 751 occupied housing units counted in the survey.

The estimate for the number of housing units in the Amargosa Valley and Pahrump portions of the RadMP grid comes from the VEA. The specific data set obtained from the VEA for this purpose represents "active residential accounts." Unfortunately, there is no specific information that can determine the exact number of occupied housing units (households) from the VEA data for Amargosa Valley and Pahrump. In earlier reports, a 95-percent occupancy rate was applied to the VEA active residential meters to obtain an estimate of households for these two communities because, unlike the situation in Beatty, there are more active residential meters than households in both communities (DOE, 1996). Consistent with this practice, a 95-percent occupancy rate was applied to the number of active residential meters reported for these two communities by the VEA for 1Q/97. This adjustment also is consistent with the occupancy rate found for Beatty from the windshield survey, which revealed that 95.4 percent of the total units counted (787) were occupied.

As was the case for Indian Springs, PPH values specific to Amargosa Valley, Beatty, and Pahrump were taken from the biosphere survey conducted in May 1997 (UNLV, 1997). Note that group quarters populations are extremely small or nonexistent in these communities. Thus, it was assumed

that this component of the HUM for each community remained at the same level reported in the 1990 census (U.S. Bureau of the Census, 1992: 179).

Inyo County, California - The portion of the Inyo County, California population contained in the RadMP is primarily situated in Death Valley National Park (DVNP). There are both daytime and resident populations in DVNP. Information on the sources of the estimates of the daytime population is provided in Tables 3-8 and 3-9. Administrative officials of governmental and private organizations operating in DVNP were contacted to obtain their counts of residential populations. This information was supplemented by a survey that supplied data needed for the HUM.

AMFAC, Inc. provided information on the number of resident employees and their dependents at the Furnace Creek Inn and the Furnace Creek Ranch (AMFAC, personal communication, 1997). The Park Service Housing Officer provided information on the number of employees and their dependents living at Cow Creek, Stovepipe Wells, and Scotty's Castle (Death Valley National Park, personal communication, 1997) Information also was provided for the Grapevine Ranger Station housing area (Death Valley National Park, personal communication, 1997). However, the April 17, 1997 GPS survey determined that this housing area was outside of the Grid. Information also was obtained for the number of caretakers residing at the inactive Ryan Mine site (Grid Cell 808) and for the population living in Death Valley Junction (Grid Cell 809) (Furnace Creek Post Master, personal communication, 1997; Death Valley Junction, Amargosa Inn, personal communication, 1997).

On-site work done on April 19-20, 1997, including a windshield survey, was used to develop the housing unit counts for the housing areas of Death Valley, including the Timbisha Village (Grid Cell 707), which is occupied by members of a Shoshone group. The population of the Timbisha Village was estimated by using the HUM in conjunction with the PPH value (2.45) used for Amargosa Valley. An estimate of the number of occupied units at Furnace Creek Inn and Ranch (Grid Cell 707) as well as at Cow Creek (Grid Cell 707), Stovepipe Wells (Grid Cell 906) and Scotty's Castle (Grid Cell 1004) was obtained by dividing the population data by this same PPH value (2.45).

One of the Grid Cells in Death Valley (1004) has a substantial group-quarters population (48), because of the nature of housing for many of the resident employees working at Scotty's Castle, which is located in this cell.

Race and Hispanic Origin Estimates - The population estimates by race and Hispanic origin for selected communities within the RadMP grid circle found in Table 3-5 were derived from the biosphere survey (UNLV, 1997). This survey was conducted in the spring of 1997 and covered the communities of Amargosa Valley, Beatty, Indian Springs, and Pahrump. From it, the proportion of persons by race and Hispanic origin is available by community. These proportions were multiplied by the independently determined population estimates (Table 3-4) for each community to find the estimated number by race and Hispanic origin.

2.2.2 Agriculture

Agriculture data for the spring of 1996 and 1997 were obtained by examination of the agricultural activities within the RadMP grid during the period from April to June of each year. The method used to compile agriculture data consisted of the following steps: (1) previously-collected information regarding agricultural activities within the RadMP grid was compiled and entered into a data base, including the type of agriculture (i.e., type of crop or livestock), the number of acres of cropland or number of animals, and the location of the agricultural activity; (2) location of the agricultural activities listed in the database (including the RadMP grid cell number) was identified on color aerial photographs of southern Nye County taken during 1997 (USDA, 1997); (3) field trips were conducted during May and June 1997 to verify the current existence of, or changes to previously observed agriculture, and to identify any agricultural activity not yet recorded. These data were verified, where possible, with the land owner or other individuals knowledgeable of local agricultural activities.

GPS technology was utilized to accurately identify the grid cell location of cattle ranches and other agricultural activities between Beatty and Scotty's Junction. Additionally, all grid cell locations and previously recorded information were reviewed for accuracy and corrections were entered into the database. The data presented in Section 3.0 reflects all changes and corrections.

3.0 SUMMARY OF SOCIOECONOMIC DATA BY RadMP GRID CELL

The socioeconomic data required for support of radiological impact analyses are presented in this section along with information that supplements the data collection procedures described in the preceding section. The data include information about the spatial distribution of population and agricultural activities within a 50-mile radius of Yucca Mountain.

Population estimates are produced by federal, state, and local government agencies, universities, and private enterprises--often for widely different purposes. As mentioned earlier, one of the factors that complicates the comparison of various community characteristics is the lack of a common geographic definition. A community's name may be used to identify a variety of areas, including: those specified by the U.S. Bureau of the Census; the jurisdictional tax boundaries specified by state or local governments (either county or special district governing boards); and a utility company's service area. These differences, in turn, contribute to varying estimates of a community's population. In the community of Pahrump, for example, the 1990 U.S. Census Block Group aggregation of census blocks used for one set of population estimates represents an area larger than the tax boundary definition (PIC, 1996). Yet another population estimate, based upon VEA data, includes not only "Pahrump," but also Sandy Valley and Spring Mountain, an area that, in total, is similar to the census block group aggregation 9804-3 through 9804-6 (PIC, 1996). Because of these three different definitions, population estimates for Pahrump are provided in this report not only for the portion within the grid, but also for the other two areas. These data facilitate the comparison of population estimates of Pahrump done by different groups using these different geographic definitions. Note, however, the town boundaries shown on Figure 2-2 are the primary definitions of Pahrump.

3.1 HOUSING AND POPULATION

Table 3-1 presents the estimated number of housing units by community and grid cell from 1Q/96 to 1Q/97. Table 3-2 provides similar geographic information on the number of occupied housing units (households) while Table 3-4 shows estimates of the resident population. Table 3-3 provides PPH estimates by community. Table 3-5 provides the distribution of the resident population by race and Hispanic origin.

Estimates of Nye County's resident population by grid cell were computed using the HUM, as described in Section 2.2.1. For Amargosa Valley and Pahrump, these estimates are based on the active residential accounts provided by the VEA. Within Amargosa Valley, Beatty, and Pahrump, the VEA residential accounts were allocated into grid cells using an automated system that associated VEA meter identifiers with grid cells.

As stated earlier, a windshield survey was conducted to establish the baseline estimate of housing units for Beatty as of 1Q/96 and 1Q/97. The total housing unit and occupied unit counts for 1Q/97 obtained from the windshield survey were allocated into grid cells using the proportion of meters by grid cell as reported by the VEA. This allocation was checked against the block-specific counts by grid cell. Estimates of Beatty's population for 2Q/96, 3Q/96, and 4Q/96 were obtained by interpolating between the estimates for 1Q/96 and 1Q/97.

Housing and population information on Indian Springs (Grid cell 912) for 1Q/96 was provided by the Clark County Planning Commission (DOE 1996). The 1Q/97 estimate for both Indian Springs and Cold Creek was taken from the windshield survey. Estimates of Indian Springs for 2Q/96, 3Q/96 and 4Q/96 were obtained by interpolating between 1Q/96 and 1Q/97. The estimate for Indian Springs includes 4 units counted in nearby Cactus Springs. A windshield survey was not done for Cold Creek in 1996. To maintain comparability for this area, the 1997 count of housing units was assumed to apply to each quarter in 1996.

Also, as described earlier, an on-site survey also was used to obtain housing unit counts in Death Valley for 1Q/97. This was supplemented by information gained from conversations with housing and other officials at Death Valley (AMFAC, 1997; Death Valley National Park, 1997). Comparable information for 1Q/96 to 4Q/96 is not available. To fill in this gap, the assumption was made that there was no change in data between 1Q/96 and 1Q/97.

The data in Table 3-1 show that the largest absolute and relative increase in housing stock occurred in Pahrump. For the portion of Pahrump within grid cells, the increase in housing stock from 1Q/96 to 1Q/97 was 589 units (12.6-percent increase). The primary source of this increase was a gain of 405 units in grid cell 1010. The data for Beatty show a slight decline, from 792 units to 787 during the same period. Overall, housing stock in the grid increased from 6,949 to 7,556 units (8.7 percent).

Table 3-1. Estimates of Residential Housing Units by Grid Cell and Community, First Quarter 1996 to First Quarter 1997

AREA	1Q96	2Q96	3Q96	4Q96	1Q97
Amargosa Valley					
Grid Cell 309	3	3	3	3	3
Grid Cell 408	115	120	119	119	120
Grid Cell 409	81	82	85	86	86
Grid Cell 508	13	13	13	13	14
Grid Cell 509	141	142	142	144	143
Grid Cell 609	35	36	36	39	39
Grid Cell 610	66	67	65	63	65
Grid Cell 710	5	5	5	5	5
Grid Cell 809	1	1	1	1	1
Total In Grid	460	469	469	473	476
Beatty					
Grid Cell 403 (Oasis Valley)	16	16	16	16	16
Grid Cell 404	477	476	476	475	474
Grid Cell 405	281	281	280	280	279
Grid Cell 503 (Oasis Valley)	1	1	1	1	1
Grid Cell 803	3	3	3	3	3
Grid Cell 903 (Scotty's Junction)	14	14	14	14	14
Total In Grid	792	791	790	789	787
Pahrump					
Grid Cell 810	6	5	5	7	8
Grid Cell 910	1,460	1,526	1,560	1,609	1,642
Grid Cell 1010	3,201	3,347	3,400	3,512	3,606
Total In Grid	4,667	4,878	4,965	5,128	5,256
Total in Pahrump Tax Boundary (Excludes Sandy Valley & Spring Mountain)	6,876	7,192	7,359	7,639	7,852
Total VEA Pahrump Service Area (Includes Tax Boundary plus Sandy Valley & Spring Mountain)	7,337	7,668	7,853	8,149	8,367

Table 3-1. Estimates of Residential Housing Units by Grid Cell and Community, First Quarter 1996 to First Quarter 1997 (Continued)

AREA	1Q96	2Q96	3Q96	4Q96	1Q97
Mercury					
Grid Cell 512	n/a	n/a	n/a	n/a	n/a
Grid Cell 612	n/a	n/a	n/a	n/a	n/a
Total In Grid	n/a	n/a	n/a	n/a	n/a
Clark County					
Grid Cell 912 (Indian Springs)	551	553	554	556	558
Grid Cell 1012 (Indian Springs)	0	0	0	0	0
Grid Cell 1011 (Cold Creek)	135	135	135	135	135
Total In Grid	686	688	689	691	693
Death Valley					
Grid Cell 707 (Furnace Creek)	318	318	318	318	318
Grid Cell 808 (Ryan)	3	3	3	3	3
Grid Cell 809 (Death Valley Junction)	4	4	4	4	4
Grid Cell 906 (Stovepipe Wells)	11	11	11	11	11
Grid Cell 1004 (Scotty's Castle)	8	8	8	8	8
Total In Grid	344	344	344	344	344
Esmeralda County					
Grid Cell 904	0	0	0	0	0
Grid Cell 1004	0	0	0	0	0
Total In Grid	0	0	0	0	0
Lincoln County					
Grid Cell 915	0	0	0	0	0
Grid Cell 1015	0	0	0	0	0
Total In Grid	0	0	0	0	0
GRAND TOTAL IN GRID	6,949	7,170	7,257	7,425	7,556

The area designated as Amargosa Valley (grid cells 309 ,408, 409, 508, 509, 609, 610, 710, 809) generally conforms to the boundaries of this unincorporated town as defined by the Nye County Commissioners. The area designated as Beatty (grid cells 403, 404, 405, 503, 903) generally conforms to the Beatty Census Division, a geographic definition used by the U.S. Bureau of the Census in the 1990 census. The areas designated as Pahrump conform to the varying definitions discussed in Section 3.0 of the text. The area designated as Indian Springs conforms to the Indian Springs taxing district defined by Clark County and falls within grid cells 912 and 1012.

Table 3-2 shows the estimated number of households (occupied housing units) by community and grid cell from 1Q/96 to 1Q/97. For 1Q/97, the data for Beatty, Indian Springs, and Cold Creek are taken from the windshield survey. For 2Q/96, 3Q/96, and 4Q/96, the data for Beatty, Indian Springs, and Cold Creek were developed using linear interpolation between 1Q/96 and 1Q/97. The stock of households within the grid changed in much the same manner as did the housing stock. As was found for housing units, the largest increase occurred in Pahrump, which fueled the increase in households for the grid as a whole. Overall, households increased from 6,527 to 7,099, an increase of 8.8 percent.

Data on the number of persons per household (PPH) in each community for 1990 and 1997 are shown in Table 3-3. The 1990 data are from the U.S. Census, while the 1997 data are from the biosphere survey (UNLV, 1997). The table shows that PPH values increased for each community between 1990 and 1997.

Table 3-4 provides estimates of the resident population by grid cell and community. To obtain the resident population estimates for Amargosa Valley, Cold Creek, Indian Springs, and Pahrump, the number of households (Table 3-2) was multiplied by the community-specific 1997 PPH value (Table 3-3) to produce the household population estimates by quarter. The group quarters population was added to the household population to get the total population by quarter. The group quarters population in Amargosa Valley and Cold Creek is zero for the period in question; therefore, the total population in these communities is equal to the household population. For Pahrump, it is assumed that the group quarters population is the same as it was in 1990, 81 persons (Table 76, U.S. Bureau

Table 3-2. Estimates of Occupied Housing Units by Grid Cell and Community, First Quarter 1996 to First Quarter 1997

AREA	1Q96	2Q96	3Q96	4Q96	1Q97
Amargosa Valley					
Grid Cell 309	3	3	3	3	3
Grid Cell 408	108	113	113	113	115
Grid Cell 409	77	78	80	81	81
Grid Cell 508	12	12	12	12	13
Grid Cell 509	133	134	134	137	136
Grid Cell 609	34	35	35	37	37
Grid Cell 610	63	64	62	60	61
Grid Cell 710	5	5	5	5	5
Grid Cell 809	1	1	1	1	1
Total In Grid	437	446	446	449	452
Beatty					
Grid Cell 403 (Oasis Valley)	15	15	15	15	15
Grid Cell 404	453	453	453	452	452
Grid Cell 405	267	267	267	267	267
Grid Cell 503 (Oasis Valley)	1	1	1	1	1
Grid Cell 803	3	3	3	3	3
Grid Cell 903 (Scotty's Junction)	13	13	13	13	13
Total In Grid	752	752	752	751	751
Pahrump					
Grid Cell 810	6	5	5	7	8
Grid Cell 910	1,387	1,450	1,482	1,528	1,560
Grid Cell 1010	3,041	3,180	3,230	3,337	3,426
Total In Grid	4,434	4,634	4,717	4,872	4,993
Total In Pahrump Tax Boundary (Excludes Sandy Valley & Spring Mountain)	6,532	6,832	6,991	7,257	7,459
Total VEA Pahrump Service Area (Includes Tax Boundary plus Sandy Valley & Spring Mountain)	6,970	7,285	7,460	7,742	7,949
Mercury					
Grid Cell 512	n/a	n/a	n/a	n/a	n/a
Grid Cell 612	n/a	n/a	n/a	n/a	n/a
Total In Grid	n/a	n/a	n/a	n/a	n/a

Table 3-2. Estimates of Occupied Housing Units by Grid Cell and Community, First Quarter 1996 to First Quarter 1997 (Continued)

AREA	1Q96	2Q96	3Q96	4Q96	1Q97
Clark County					
Grid Cell 912 (Indian Springs)	532	531	530	530	529
Grid Cell 1012 (Indian Springs)	0	0	0	0	0
Grid Cell 1011 (Cold Creek)	43	43	44	44	45
Total In Grid	575	574	574	574	574
Death Valley					
Grid Cell 707 (Furnace Creek)	303	303	303	303	303
Grid Cell 808 (Ryan)	3	3	3	3	3
Grid Cell 809 (Death Valley Junction)	4	4	4	4	4
Grid Cell 906 (Stovepipe Wells)	11	11	11	11	11
Grid Cell 1004 (Scotty's Castle)	8	8	8	8	8
Total In Grid	329	329	329	329	329
Esmeralda County					
Grid Cell 904	0	0	0	0	0
Grid Cell 1004	0	0	0	0	0
Total In Grid	0	0	0	0	0
Lincoln County					
Grid Cell 915	0	0	0	0	0
Grid Cell 1015	0	0	0	0	0
Total In Grid	0	0	0	0	0
GRAND TOTAL IN GRID	6,527	6,735	6,818	6,975	7,099

The area designated as Amargosa Valley (grid cells 309, 408, 409, 508, 509, 609, 610, 710, 809) generally conforms to the boundaries of this unincorporated town as defined by the Nye County Commissioners. The area designated as Beatty (grid cells 403, 404, 405, 503, 903) generally conforms to the Beatty Census Division, a geographic definition used by the U.S. Bureau of the Census in the 1990 census. The areas designated as Pahrump conform to the varying definitions discussed in Section 3.0 of the text. The area designated as Indian Springs conforms to the Indian Springs taxing district defined by Clark County and falls within grid cells 912 and 1012.

Table 3-3. Resident Population Per Household (PPH) By Community, 1990 and 1997

Community	1990 PPH	1997 PPH
Amargosa Valley	2.73	2.81
Beatty	2.21	2.45
Pahrump	2.43	2.57
Indian Springs	2.73	2.78

Sources: 1990 PPH values are taken from Table 76 (U.S. Bureau of the Census, 1992)
The 1990 value shown for Indian Springs is the value for the Clark County Census Division
1997 PPH values are from the 1997 Biosphere Survey (UNLV, 1997)

of the Census, 1992). Note that the population figures shown in Table 3-4 for Pahrump include the areas both within and outside of the grid cells, as was shown in Table 3-1 and Table 3-2 for housing units and households, respectively. For Indian Springs, 33 persons were counted in group quarters in 1996 (DOE, 1996). However, the 1997 survey revealed that no persons were in group quarters in 1997.

For Beatty, the 1Q/97 resident population was estimated as follows. First, the estimated number of occupied units (Table 3-2) was multiplied by the community-specific PPH value (Table 3-3) to produce the household population estimate. Under the assumption that the group quarters population has been constant since 1990, seven persons assumed to be in group quarters were added to obtain the total population. The 1Q/96 population was estimated in a similar manner. The estimates for 2Q/96, 3Q/96, and 4Q/96 were produced by linear interpolation between 1Q/96 and 1Q/97. To obtain the 1Q/97 population by grid cell, the PPH value for Beatty was multiplied by the number of occupied housing units in each grid cell. As stated earlier, GPS measurements were used to allocate the housing units and population into grid cells for the area between Beatty and Scotty's Junction.

Table 3-4. Resident Population by Grid Cell and Community, First Quarter 1996 to First Quarter 1997

AREA	1Q96	2Q96	3Q96	4Q96	1Q97
Amargosa Valley					
Grid Cell 309	9	9	9	8	8
Grid Cell 408	303	317	317	316	322
Grid Cell 409	218	220	226	229	229
Grid Cell 508	34	34	34	34	37
Grid Cell 509	375	377	377	384	381
Grid Cell 609	94	97	97	105	104
Grid Cell 610	177	180	174	169	172
Grid Cell 710	14	14	14	14	14
Grid Cell 809	3	3	3	3	3
Total In Grid	1,227	1,251	1,251	1,262	1,270
Beatty					
Grid Cell 403 (Oasis Valley)	37	37	37	37	37
Grid Cell 404	1,112	1,111	1,111	1,110	1,109
Grid Cell 405	658	658	658	658	658
Grid Cell 503 (Oasis Valley)	3	3	3	3	3
Grid Cell 803	7	7	7	7	7
Grid Cell 903 (Scotty's Junction)	32	32	32	32	32
Total In Grid	1,849	1,848	1,848	1,847	1,846
Pahrump					
Grid Cell 810	15	12	12	17	20
Grid Cell 910	3,564	3,725	3,808	3,928	4,009
Grid Cell 1010	7,897	8,253	8,382	8,656	8,685
Total In Grid	11,476	11,990	12,202	12,601	12,714
Total In Pahrump Tax Boundary (Excludes Sandy Valley & Spring Mountain)	16,788	17,559	17,967	18,651	19,171
Total VEA Pahrump Service Area (Includes Tax Boundary plus Sandy Valley & Spring Mountain)	17,913	18,721	19,173	19,896	20,428
Mercury					
Grid Cell 512	0	0	0	0	0
Grid Cell 612	0	0	0	0	0
Total In Grid	0	0	0	0	0

Table 3-4. Resident Population by Grid Cell and Community, First Quarter 1996 to First Quarter 1997 (Continued)

AREA	1Q96	2Q96	3Q96	4Q96	1Q97
Clark County					
Grid Cell 912 (Indian Springs)	1,485	1,481	1,478	1,474	1,471
Grid Cell 1012 (Indian Springs)	0	0	0	0	0
Grid Cell 1011 (Cold Creek)	120	121	123	124	125
Total In Grid	1,605	1,602	1,601	1,598	1,596
Death Valley					
Grid Cell 707 (Furnace Creek)	549	549	549	549	649
Grid Cell 808 (Ryan)	8	8	8	8	8
Grid Cell 809 (Death Valley Jct.)	9	9	9	9	9
Grid Cell 906 (Stovepipe Wells)	27	27	27	27	27
Grid Cell 1004 (Scotty's Castle)	68	68	68	68	68
Total In Grid	661	661	661	661	661
Esmeralda County					
Grid Cell 904	0	0	0	0	0
Grid Cell 1004	0	0	0	0	0
Total In Grid	0	0	0	0	0
Lincoln County					
Grid Cell 915	0	0	0	0	0
Grid Cell 1015	0	0	0	0	0
Total In Grid	0	0	0	0	0
GRAND TOTAL IN GRID	16,818	17,352	17,563	17,969	18,087

The area designated as Amargosa Valley (grid cells 309, 408, 409, 508, 509, 609, 610, 710, 809) generally conforms to the boundaries of this unincorporated town as defined by the Nye County Commissioners. The area designated as Beatty (grid cells 403, 404, 405, 503, 903) generally conforms to the Beatty Census Division, a geographic definition used by the U.S. Bureau of the Census in the 1990 census. The areas designated as Pahrump conform to the varying definitions discussed in Section 3.0 of the text. The area designated as Indian Springs conforms to the Indian Springs taxing district defined by Clark County and falls within grid cells 912 and 1012.

A similar procedure was used to obtain the same information for Beatty for 1Q/96. That is, the total housing units from the 1996 windshield survey were allocated into grid cells using the same proportion found for 1Q/97. This was reasonable because there was very little change in housing

stock. The 1997 PPH value was multiplied by the occupied housing units in each grid cell to obtain the estimated population in each grid cell for 1Q/96. The housing and population information by grid cell for 2Q/96, 3Q/96, and 4Q/96 also was obtained by linear interpolation.

An estimate of the number of individuals in group quarters in Nye County was added to grid cells 404, 405 and 1010, the only cells with group quarters population in both 1996 and 1997. Four of the seven persons in group quarters in Beatty were allocated to grid cell 405; the remaining three were allocated to grid cell 404. All 81 of Pahrump's group quarters population were allocated to grid cell 1010. Note also that the 48 resident employees at Scotty's Castle residing in group quarters are included in the population total shown for grid cell 1004.

The grid cell showing the largest increase is 1010, which is in Pahrump. It gained 788 people, an increase of 10 percent over its 1Q/96 population of 7,897. Overall, the population within the entire grid increased from 16,818 to 18,087, an increase of 7.5 percent.

The estimated number of persons by race and Hispanic origin is shown in Table 3-5 for the primary communities within the grid. As of 1Q/97, these communities, in total, comprise 96 percent of the grid's total population of 18,087. The racial categories shown in Table 3-5 conform to those used by the U.S. Bureau of the Census as does the "Hispanic origin" ethnic group (U.S. Bureau of the Census, 1992). Persons identifying themselves as belonging to the "other" racial category usually use terms such as multiracial, multiethnic, mixed, or a Spanish/Hispanic origin group in describing themselves (U.S. Bureau of the Census, 1993).

As can be seen in Table 3-5, the white population makes up about 95 percent of the racial composition. The largest single identified racial group after white is American Indian, with 286 persons, or about 1.6 percent of the population in these communities. Those of Hispanic origin represent about six percent of the population. Note that persons of Hispanic origin may be of any race. Most persons of Hispanic origin in this survey identified themselves as belonging to either the "other" or "white" racial groups, which is consistent with the experience of the U.S. Bureau of the Census, as described in the preceding paragraph.

Table 3-5. Resident Population By Race and Hispanic Origin, First Quarter 1997

Area	White	Black	American Indian	Asian & Pacific Islander	Other	Total	Hispanic Origin
Amargosa Valley	1,110	0	13	0	147	1,270	166
Beatty	1,661	0	66	15	104	1,846	103
Pahrump	12,015	114	114	51	420	12,714	636
Indian Springs	1,311	0	93	23	44	1,471	93
Total	16,097	114	286	89	715	17,301	998

The area designated as Amargosa Valley (grid cells 309, 408, 409, 508, 509, 609, 610, 710, 809) generally conforms to the boundaries of this unincorporated town as defined by the Nye County Commissioners. The area designated as Beatty (grid cells 403, 404, 405, 503, 903) generally conforms to the Beatty Census Division, a geographic definition used by the U.S. Bureau of the Census in the 1990 census. The area designated as Pahrump conforms to the area of Pahrump falling within the grid (cells 1010, 810, and 910). The area designated as Indian Springs conforms to the Indian Springs taxing district defined by Clark County and falls within grid cells 912 and 1012.

3.2 DAYTIME POPULATION: EMPLOYMENT

The major sources of daytime populations due to employment in the RadMP grid are the NTS, the YMP, and mines. Estimates of the employment in southern Nye County are provided for the NTS and the YMP site in Table 3-6 (DOE/NV, 1996). From January to December 1996, NTS employment levels decreased slightly from 1,393 to 1,382. Table 3-6 indicates that during 1996, YMP employment increased from 182 in January to 375 in December.

Table 3-6. Daytime Population: Nevada Test Site and YMP Monthly Employment (Number of Persons), January to December 1996

	January	February	March	April	May	June	July	August	September	October	November	December
NTS	1,393	1,417	1,428	1,467	1,457	1,453	1,439	1,366	1,369	1,409	1,426	1,382
YMP	182	172	171	431	431	425	362	350	355	355	373	375
Total	1,575	1,589	1,599	1,898	1,888	1,878	1,801	1,716	1,724	1,764	1,799	1,757

Source (DOE/NV, 1996). The monthly data are taken directly from "Report of Nevada Test Site and Other Related Employment," which has been issued by the Human Resources Division since April 1996, Nevada Operations Office, U.S. Department of Energy. Data for January through March 1996, are taken from reports issued by the Industrial Relations Division, Nevada Operations Office, U.S. Department of Energy. The NTS data are taken from the intersection formed by the column labeled "NTS Total" and the row labeled "Location Totals" (or its equivalent) as found in the employment report. The YMP data are taken from the intersection formed by the column labeled "YM" and the row labeled "Location Totals" (or its equivalent) as found in the employment report. Note that prior to July 1995, NTS and YMP employment were reported as one category in these reports (DOE/NV, August 1995). The most recent report was distributed in January 1997 and covers employment for December 1996.

Table 3-7 provides estimates of the employment levels for the major mines in southern Nye County and indicates that overall employment levels declined from 509 in 1995 to 460 in 1996. The Bullfrog Mine, west of Beatty (grid cells 405 and 505), the single largest employer among these mines, showed a slight increase, from 372 in 1995 to 382 in 1996.

3.3 DAYTIME POPULATION: SCHOOL ENROLLMENT

Primary concentrations of daytime populations also occur at the schools within the RadMP grid. Table 3-8 indicates the number of schools in particular grid cells. Within the RadMP grid there are six grid cells that include a total of ten schools, four of which are located in Pahrump. There is a fifth school in Pahrump, Mt. Charleston, but fieldwork determined that this school is outside of the grid. In 1996, this school was believed to be inside the grid and its enrollment was included in the 1996 report (DOE, 1996).

Table 3-7. Daytime Population: Employment Figures for the Major Mines Within the RadMP Grid

Major Mines Reported Within the RadMP Circle	1989	1990	1991	1992	1993	1994	1995	1996
IMV Pitts	72	74	54	53	46	37	38	37
Bullfrog Mine	280	310	330	268	266	290	372	382
Sterling Mine	35	42	n/a	n/a	n/a	42	53	36
New Discovery Mine	7	8	10	10	6	6	5	5
Gold Bar Mine	42	36	22	n/a	n/a	n/a	n/a	n/a
Daisy Mine	2	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Motherlode Mine	46	42	n/a	n/a	n/a	n/a	n/a	n/a
Cind-R-Lite	n/a	2	2	n/a	n/a	n/a	4	n/a
American Borate	26	n/a	n/a	n/a	n/a	n/a	37	n/a
TOTAL	510	514	418	331	318	375	509	460

Source: 1989 to 1995 data are from an annual report, *Major Mines of Nevada* (Year), published by the Nevada Bureau of Mines and Geology, Nevada Division of Minerals, Annual Publications, 1990-1996, Reno Nevada. Data for 1996 are found in the website "Major Mines of Nevada 1996" (Website, http://www.nbmg.unr.edu/mm) maintained by the Nevada Bureau of Mines and Geology, Nevada Division of Minerals. Note that "n/a" indicates that there is no information in the source document for the mine in question.

Table 3-8. Daytime Population: Public Schools by Grid Cell and Community

RadMP Grid Cell	Amargosa Valley	Beatty	Pahrump	Indian Springs	Death Valley	Total
404 (Beatty)		1				1
405 (Beatty)		1				1
409 (Amargosa Valley)	1					1
707 (Death Valley)					1	1
912 (Indian Springs)				2		2
1010 (Pahrump)			4			4
Total In Grid	1	2	4	2	1	10

Sources: Nye County School District and Clark County School District, Nevada; Inyo County School District, California; and Pahrump Valley Times Rural Phone Book, 1996-97

Table 3-9 provides school enrollment estimates for the ten schools by grid cell from 1Q/96 to 1Q/97. During this period, school enrollment in the grid increased from 3,062 to 3,578, a gain of 516 students (16.8 percent). Virtually all of this was due to the increase of students (513) in the Pahrump Schools. Note that the data shown in Table 3-9 reflect the removal of enrollment for the Mt. Charleston school in Pahrump from the 1996 figures so that the change from 1996 to 1997 reflects enrollment only for the ten schools inside the grid.

Table 3-9. Daytime Population: Public School Enrollments by Grid Cell and Community, First Quarter 1996 to First Quarter 1997

RadMP Grid Cell	1Q/96	2Q/96	3Q/96	4Q/96	1Q/97
404 (Beatty)	263	263	263	264	264
405 (Beatty)	173	175	177	179	181
409 (Amargosa Valley)	180	179	177	175	174
707 (Death Valley)	13	13	13	13	13
912 (Indian Springs)	410	407	404	401	397
1010 (Pahrump)	2,036	2,164	2,292	2,420	2,549
Total In Grid	3,062	3,191	3,320	3,449	3,578

Sources: The 1Q/96 data are taken from DOE (1996). The 1Q/97 data are from: Inyo County School District; Nye County School District; and Clark County School District. For Death Valley, the 1Q/96, actual figures were not available so the enrollment shown for 1996 is taken from the 1Q/97 enrollment, under the assumption that it has been stable throughout the year. The grid cell figures for 2Q/96 through 4Q/96 are based on linear interpolation between the grid cell figures reported for 1Q/96 and 1Q/97. The grid cell figures for 2Q/96 to 4Q/96 were summed to obtained the "Total In Grid" figures.

3.4 AGRICULTURAL CHARACTERISTICS

Tables 3-10 and 3-11 show estimates of livestock within the grid area for spring 1996 and 1997. The distribution of beef cattle reported in these tables includes cattle grazing on privately owned land and/or Bureau of Land Management (BLM) administered lands within the study area. The number of beef cattle decreased only slightly from 290 in spring 1996 to 275 in spring 1997. Notable

Table 3-10. Estimates of Livestock by Grid Cell for 1996

Grid Cell	Cattle	Milk Cows	Pigs	Sheep	Goats	Ostriches	Poultry	Catfish
403	150							
404						30		
408	6		36	6	9		12	8,000
409	20		19			4		
504	20							
508								
509		3,300						
611	85							
910	8					41		
912	1			6	25			
1010		2,100			34	15		
Total In Grid	290	5,400	55	12	68	90	12	8,000

Notes: The count of cattle includes those grazing on privately-owned land or BLM administered land and does not include calves born in 1996. The values reported for milk cows are based on the average number of lactating cows per day and do not include replacement cows (SMPA, April 1996). "Poultry" includes chickens, turkeys, geese, and ducks. The number of catfish is based on the reported number expected to be sold in 1997.

Table 3-11. Estimates of Livestock by Grid Cell for 1997

Grid Cell	Cattle	Milk Cows	Pigs	Sheep	Goats	Ostriches	Poultry	Catfish
403	95					30		
404								
408	6		52	3	7		25	15,000
409	12					4		
504	50							
508						26		
509		4,429						
611	100							
910	8	1			1	97	3	
912	4				30			
1010		2,301					46	
Total In Grid	275	6,731	52	3	38	157	74	15,000

Notes: The count of cattle includes those grazing on privately-owned land or BLM administered land and does not include calves born in 1996. The values reported for milk cows are based on the average number of lactating cows per day and do not include replacement cows (SMPA, April 1996). "Poultry" includes chickens., turkeys, geese, and ducks. The number of catfish is based on the reported number expected to be sold in 1997.

changes in the livestock inventory from spring 1996 to spring 1997 include a 25-percent increase in the total number of milk cows, a 74-percent increase in total number of ostriches, and an 88-percent increase in the total number of catfish.

Tables 3-12 and 3-13 provide estimates of the number of acres of agricultural crops by RadMP grid cell for spring 1996 and 1997. These data show an overall estimated increase from 2,787 to 3,004 acres of crop production from spring 1996 to spring 1997. This figure is largely a reflection of newly-identified areas of agriculture.

Table 3-14 provides estimates of agricultural yields by RadMP grid cell for 1996. The figures in this table are derived from estimates provided in Nevada Agricultural Statistics for 1995-1996; thus, they may not reflect actual yields.

Table 3-12. Acres of Plant Agriculture by Grid Cell for Spring 1996

Grid Cell	Alfalfa Hay	Other Hay	Barley	Oats	TBP	Pistachios	Fruit trees	Grapes	Garlic	Onions
408	916.08	44.50	17.40		22.59	86.90	0.27		5.00	5.00
409	356.38	6.10					0.39			
508	297.50				40.01		1.62	1.06		
509	176.50			45.00		5.40		7.25		
910	122.00		9.30		88.30					
912							0.10			
1010	512.00		10.00	10.30						
Total In Grid	2,380.46	50.60	36.70	55.30	150.90	92.30	2.39	8.31	5.00	5.00

Notes: An estimated 13 percent of the alfalfa hay is in combination with oats. "Other hay" is a mixed crop that may include alfalfa, clover, timothy, and legumes or tame grasses. "TBP" refers to "To be Planted" and describes acreage prepared; however, the crop type is unidentified. "Fruit Trees" include peaches, nectarines, pomegranates and so forth; acreage is based on an estimated 154 trees per acre (derived from the ratio for peaches as found in the 1992 Census of Agriculture for Nevada). The acreage for grapes is based on an estimate of 426 vines per acre (derived from the 1992 Census of Agriculture reported for Nye County, Nevada).

Table 3-13. Acres of Plant Agriculture by Grid Cell for Spring 1997

Grid Cell	Alfalfa Hay	Other Hay	Barley	Oats	TBP	Pistachios	Fruit trees	Grapes	Garlic	Onions
408	673.90		32.00			67.90	5.30	0.03	5.00	
409	343.50	6.10					0.39			
508	548.40						1.95	1.17		
509	256.20	62.00				12.00		8.50		
910	41.70	40.00	95.30	32.20	107.30		1.20	0.14		
912							0.10			
1010	384.40	120.80			156.10	0.40	0.40			
Total In Grid	2,248.10	228.90	127.30	32.30	263.40	80.30	9.34	9.84	5.00	0.00

Notes: An estimated 13 percent of the alfalfa hay is in combination with oats. "Other hay" is a mixed crop that may include alfalfa, clover, timothy, and legumes or tame grasses. "TBP" refers to "To be Planted" and describes acreage prepared; however, the crop type is unidentified. "Fruit Trees" include peaches, nectarines, pomegranates and so forth; acreage is based on an estimated 154 trees per acre (derived from the ratio for peaches as found in the 1992 Census of Agriculture for Nevada). The acreage for grapes is based on an estimate of 426 vines per acre (derived from the 1992 Census of Agriculture reported for Nye County, Nevada).

Table 3-14. Estimates of Agricultural Yields by Grid Cell for 1996

Grid Cell	Alfalfa Hay	Other Hay	Barley	Onions	Milk
408	4,672	49	1,131	115	
409	1,818	7			
508	1,517				
509	900				59
910	622		605		
912					
1010	2,611		650		38
Total In Grid	12,140	56	2,386	115	97

Notes: Yields for Alfalfa Hay are in tons per year and estimated at 5.1 tons per acre in Nye County for 1995 (State of Nevada, 1996). Yields for "Other Hay are in tons per year and estimated at 1.1 tons per acre in Nye County for 1995 (State of Nevada, 1996). Barley yields are in bushels per year and estimated at 65 bushels per acre in northeastern and southern Nevada counties in 1995 (State of Nevada, 1996). Onion yields are in tons per year and estimated at 23 tons per acre in 1995 (State of Nevada, 1995). Milk yields are in millions of pounds per year and estimated at 18,000 pounds per cow in Nye County in 1995 (State of Nevada, 1995).

4.0 REFERENCES

10 CFR Part 960 1984. Title 10, "Energy," Part 960, "General Guidelines for the Recommendation of Sites for Nuclear Waste Repositories," Washington, D.C.: U.S. Government Printing Office.

AMFAC, Inc. 1997. Personal Conversation (30 May 1997) with M. Brady.

Byerly, E. 1990. "State and Local Agencies Preparing Population and Housing Estimates." *Current Population Reports* Series P.25 No. 1063. U.S. Bureau of the Census.

Death Valley Junction, Amargosa Inn 1997. Personal conversation (19 April 1997) with M. Brady.

Death Valley National Park 1997. Personal Communication (29 April 1997) with M. Brady.

DOE (U.S. Department of Energy) 1990. *Yucca Mountain Site Characterization Project Radiological Monitoring Plan, Revision 1.* Las Vegas, Nevada: U.S. Department of Energy, Yucca Mountain Site Characterization Project Office.

DOE (U.S. Department of Energy) 1991. *Yucca Mountain Site Characterization Project Summary of Socioeconomic Data Analyses Conducted in Support of the Radiological Monitoring Program During Calendar Year 1990.* Las Vegas, Nevada: U.S. Department of Energy, Yucca Mountain Site Characterization Project Office.

DOE (U.S. Department of Energy) 1996 . *Yucca Mountain Site Characterization Project Summary of Socioeconomic Data Analyses Conducted in Support of the Radiological Monitoring Program During Calendar Year 19965.* Las Vegas, Nevada: U.S. Department of Energy, Yucca Mountain Site Characterization Project Office.

DOE/NV (U.S. Department of Energy/Nevada Operations) 1996. "Report of Nevada Test Site and Other Related Employment." Las Vegas, NV: Human Resources Division (since April, 1996; prior to April, 1996, reports were issued by the Industrial Relations Division), Nevada Operations Office, U.S. Department of Energy (monthly) 1996. U.S. Department of Energy.

DOE/NV (U.S. Department of Energy/Nevada Operations) August, 1995. "Report of Nevada Test Site and Other Related Employment, July, 1995." Las Vegas, NV: Industrial Relations Division, Nevada Operations Office, U.S. Department of Energy (monthly).

DOE (U.S. Department of Energy) 1996. *Yucca Mountain Site Characterization Project Socioeconomic Monitoring Program Quarterly Employment Data Report, January 1997 through March 1996.* Las Vegas, Nevada: U.S. Department of Energy, Yucca Mountain Site Characterization Project Office.

EPA (Environmental Protection Agency) 1990. *Radiation Monitoring Around United States Nuclear Test Areas, Calendar Year 1990,* Las Vegas Nevada: U.S. Environmental Protection Agency.

EPA (Environmental Protection Agency) 1992. *User's Guide for CAP88-PC, Revision 1*, Las Vegas Nevada: U.S. Environmental Protection Agency.

Furnace Creek Post Master 1997. Personal communication (29 April 97) with M. Brady.

Nevada Bureau of Mines and Geology 1990-1996. *Major Mines of Nevada, 1989 - 1995*. Reno, Nevada: Nevada Bureau of Mines and Geology, Nevada Department of Minerals.

Nevada Bureau of Mines and Geology 1997. *Major Mines of Nevada, 1996.* (World Wide Web Website http://www.nbmg.unr.edu/mm). Maintained by the Nevada Bureau of Mines and Geology, Nevada Division of Minerals. Reno, Nevada.

NWPA (Nuclear Waste Policy Act) 1982. "Nuclear Waste Policy Act of 1982," [as amended by the Nuclear Waste Policy Amendments Act (NWPAA) of 1987], Public Law 97-425. Washington, D.C.

Nye County, Nye County Assessor's Office 1988. "Resolution No. R88-38, Beatty Taxing District Boundaries." Information received from Robin Rivero, Chief Deputy, Tonopah, Nevada, October 1993.

PIC (Planning Information Corporation) 1996. *Draft Population Estimates Through the Fourth Quarter, 1996*, prepared for the Nye County Board of Commissioners, Tonopah Nevada.

Roe, L., J. Carlson, and D. Swanson 1992. "A Variation of The Housing Unit Method for Estimating the Population of small, rural areas: A case study of the local expert procedure"*Survey Methodology* 18: 155-163.

SMPA (Security Milk Producers Association) 1996. Unpublished data provided by L. Sharfi, SMPA Accounting Coordinator, June 6 1997. Ontario, CA.

State of Nevada 1996. *Nevada Agricultural Statistics 1995-1996.* Reno, Nevada: Nevada Agricultural Statistics Service.

UNLV (University of Nevada, Las Vegas) 1997. " Summary Report on The 1997 Biosphere Survey." Las Vegas, NV: Cannon Center For Survey Research, UNLV

U.S. Bureau of the Census 1993. *Population and Housing Unit Counts, Nevada. 1990 Census of Population and Housing.* 1990 CPH-2-30. Washington D.C.: U.S. Government Printing Office.

U.S. Bureau of the Census 1992. *General Population Characteristics, Nevada. 1990 Census of Population and Housing.* 1990 CP-1-30. Washington D.C.: U.S. Government Printing Office.

U.S. Bureau of the Census 1991. *Summary Population and Housing, Nevada. 1990 Census of Population and Housing.* 1990 CPH-1-30. Washington D.C.: U.S. Government Printing Office.

USDA (U.S. Department of Agriculture) Farm Service Agency 1990 and 1997 Aerial Photography.

VEA (Valley Electric Association) 1997. Residential and Commercial Account Information, Pahrump, Nevada.

APPENDIX A

READING THE RadMP GRID

APPENDIX A

Reading the RadMP Grid

The RadMP grid is divided into 16 equal sections of 22.5 degree arcs. Beginning with an undivided 4-km circle at the center, there are ten concentric rings each 8-km in width. **Including the center, there are 161 grid cells. The RadMP grid boundary is 84 kilometers from its center point, whose coordinates are defined as Easting 551135.7, Northing 4078351.6 Universal Transverse Mercator (UTM) Grid Zone 11.**

The grid data contained in Tables 3-1, 3-2, 3-5, and elsewhere where data are reported for grid cells are read as follows:

1. The center of the circle is grid cell 1.
2. Each concentric ring is numbered sequentially from 100 (the first ring surrounding the center grid cell) to 1000 (the last ring of the radiological circle).
3. The 16 sections are numbered sequentially beginning with number 1, which is centered on due north. Thereafter, each subsequent section is numbered counterclockwise, so that, Section 5 is due west, Section 9 is due south, and Section 13 is due east.
4. Grid cell identifiers consist of the number of the ring followed by the number of the section. For example (refer to Figure 1, p. 2-3), Death Valley Junction is found in Grid cell 809 and the community of Cold Creek is contained in grid cell 1011.